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"Guanidine, Vinegar, and Health," "The Signs of Good Nutrition," "The Organic Mineral Elements of Nutrition," "Nutritional Disorders," "Aged Lack Vitamin B," "Diagnosis of Dental Disease," and "Mental Adjustment to Physical Changes with Aging," plus Tip of the Month (Corticotrophin and Thymex) and High Points of Thymex

The following is a transcription of the May 1958 issue of Dr. Royal Lee's *Applied Trophology* newsletter, originally published by Standard Process Laboratories.

Guanidine, Vinegar, and Health

Guanidine is a toxic end product of mammalian metabolism. It may be considered a fatigue poison, often produced by the action of other poisons (such as carbon tetrachloride and arsphenamine) and found in excess amount in the blood in eclamptic toxemia, anaphylaxis, muscular dystrophy, traumatic burns, acute catarrhal jaundice, and other liver disease.

Robertson[1] tells us that a high-meat diet can create the symptoms of guanidine poisoning (i.e., the various reactions of alkalosis and calcium depletion—muscle twitching, cramps, neuritic pains of the migrating type, aggravation of allergic reactions).

Guanidine appears to he physiologically derived from the breaking down of creatine (methylguanidinoacetic acid). This breakdown probably occurs only because of an acute temporary shortage of methyl sources (methionine) and acetic acid (vinegar). This is reasonable, since enzymes are responsible for creatine formation, and all enzymes reverse under altered conditions of pH and substrate variations. Suppose there is a vital need for methyl groups and acetates in critical tissues. It is reasonable for blood creatine to break down to maintain the threshold values of these essential elements.

A definite threshold for guanidine is probable too, and the parathyroid has been given the credit for its control. Since a rise in blood guanidine causes a drop in blood calcium, it is possible that the control of calcium by the parathyroid is secondary to the guanidine regulation.

A recent book, *Folk Medicine* by D.C. Jarvis, MD, expounds the value of vinegar (apple cider vinegar, specifically) in the treatment of allergies, burns, shingles, migraine headaches, hypertension, and other conditions.[2] The control of guanidine toxicity would explain all these results.

Acetic acid is an organic acid, like citric and tartaric acids. It differs from these in that it can act to correct systemic alkalosis by its reaction with guanidine to form creatine. The other organic acids are disposed of like sugar—by oxidation. They act as fuel, not as do the mineral acids (phosphoric, hydrochloric, sulfuric), which are permanent in the body until eliminated.

If we need the mineral acids to correct a tendency to alkalosis, then the use of vinegar may not be too effective; but if we have alkalosis from too much meat in the diet, vinegar may be specifically required.

Dr. Jarvis recommends only apple cider vinegar, and we concur. It carries the mineral and vitamin content of the apple and seems far superior to any other in its "clinical effect."

We normally get phosphoric acid from cereals, but refining methods remove the minerals—thus white bread fails to protect us. Cereals carry phytin (chemically calcium-magnesium-inositol-phosphate). Phosphatase, found only in raw foods, breaks this up into phosphoric acid, inositol, and calcium and magnesium phosphates. Inositol is one of the B complex vitamins; it provides the methyl to cooperate with the vinegar (acetic radical) in regenerating guanidine into creatine.

The disposal of guanidoacetic acid by methylation is catalyzed by thyroid, as demonstrated by Stuber, Rossmann, and Proebstingin in 1923. So it may be possible that vinegar, long reputed to reduce weight, does so by releasing thyroid activity. Dr. Jarvis tells us that two teaspoonfuls of apple cider vinegar in a glass of water with each meal will produce a progressive and consistent loss of weight:

> "The loss of weight will be gradual. If a woman between 5 feet and 5 feet 6 inches tall weighing 210 pounds takes two teaspoonfuls of apple cider vinegar in a glass of water at each meal, she will weigh about 180 pounds at the end of two years. If a man has a paunch, he will lose the paunch in two years. The apple cider vinegar will have made it possible to burn the fat in the body instead of storing it and increasing the body weight.
>
> "No change in the daily food intake is made except to avoid those foods experience has shown will increase the amount of fat deposited in the body of the individual.
>
> "If continued day after day, this treatment for excess weight is completely simple and completely effective. If the daily routine happens to be such that it is not practical to take it at each meal, a dose can be taken in the morning and another at bedtime, with the third taken at some convenient time in between."

(We can recommend Dr. Jarvis's book[2] as a valuable layman's guide to some of the first principles of "folk medicine.")

The symptoms of toxic accumulations of guanidine are listed by Bodansky as nausea, diarrhea, gastroenteritis, muscular twitchings, increase in blood pressure, and respiratory disturbance.[3]

Methylguanidine is a normal constituent of muscle, found in the urine of parathyroidectomized animals and in the urine of animals that have experienced anaphylactic shock or severe burns.[4]

Barger says it is "distinctly poisonous, its action similar to that of guanidine." It kills by causing tetanic convulsions (of calcium deficiency), like the convulsions of the baby whose food has been overcooked, destroying vitamin B6, essential to calcium assimilation.

Probably methylguanidine could never occur in the tissues unless there were a lack of the acetic acid radical. We have suggested before that the calcified coronaries so often seen are due to this muscle fatigue poison seeping into the coronary artery from the surrounding muscle, causing the precipitation of calcium in the arterial wall. It will be noted that guanidine, like histamine, is found in the bloodstream in anaphylaxis. Barger says, however, that unlike histamine, its injection into the blood does not cause the anaphylactic reaction.

Barger lists "proteins, gelatin, casein, pseudomucin, and nucleic acid" as sources of guanidine. Since histamine is released by the lysis of antibody-antigen end products, it is likely that the guanidine appearing after anaphylaxis is another end product of antibody reaction, the amount depending on the kind of protein involved and the magnitude of the reaction. No doubt it is one of the poisons absorbed from the bowel in autointoxication, (as mentioned in our June 1957 issue on constipation.) It probably is an influence in "convulsion, arthritis, epilepsy, muscular dystrophy, hypertension, and eclampsia."[4]

References

1. Robertson, T.B. *Principles of Biochemistry*. Lea & Febiger, 1924.
2. Jarvis, D.C. *Folk Medicine*. H. Holt & Co., 1958.
3. Bodansky, M., and Bodansky, O. *Biochemistry of Disease*, p. 245. MacMillan Co.
4. *The Simpler Natural Bases*. Longmans Green, 1914.

The Signs of Good Nutrition

Well-developed body.
Proper weight-height proportion.
Firm, well-developed musculature.
Turgor and color of characteristically healthy skin.
Adequate fat pads beneath the skin.
Bright-pink mucous membranes, free from lesions.

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Sound, refreshing sleep.
Regular, adequate processes of digestion, assimilation, and elimination.
Eager, hearty appetite.
Appearance reflecting general well-being.

—Wayne McFarland, MD, *Modern Nutrition*, Los Angeles, California

The Organic Mineral Elements of Nutrition

The list of trace elements required in the physiological activities of the human body is constantly increasing. We can now accept the following elements as being necessary: iron, copper, zinc, manganese, cobalt, vanadium, silica, and iodine. They are components of at least one of the following identifiable organic factors; possibly more may be found.

Iron: Hemoglobin.

Copper: Tyrosinase (a member of the vitamin C complex, identified first by Dr. de Sajous in 1932 at Johns Hopkins University).

Zinc: There is about half as much zinc in the human body as iron. The pancreas is highest in zinc content, insulin being a carrier of organic zinc.[1]

Manganese: Activates enzymes. Examples are phosphatase (of bone, liver, kidney), arginase, cozymase, carboxylase, and cholinesterase.

Cobalt: Vitamin B12.

Vanadium: Improves oxygen exchanges in liver cells. (Could be anticarcinogenic?)

Silicon: Parathyroid is the regulator of blood silicon level.[5]

Iodine: Nutritional iodine should be in an organic form, to be safe. Iodized salt is unsound; often someone is found who cannot tolerate it since it contains inorganic iodide.[3] Inorganic iodine has possible danger in that it is more likely to cause hyperthyroidism.

Sodium silicate injections to test animals reduce blood alkalinity—the greatest effect occurring 7 to 10 hours after injection. CO2 in blood is also reduced (a compensatory reaction due, no doubt, to the acidity of the silicon.)[6]

Guede found about half the silicon content in tissues of old persons as in those of the young, with the highest occurring in the embryo.[7] This is consistent with the theory that silicon is the basic element of the cell cytotrophins, reduced in old age by natural tissue antibody. The fact that the cytotrophins survive up to 700°C (the fusion point of silica) with antigenic reactions remaining suggests this hypothesis. (See *Protomorphology*, Lee and Hanson, for full discussion.)

Guede says the pancreas carries the silicon reserve. This agrees with the hypothesis that the pancreas is the source of embryo hormone activity, of which some degree of availability is necessary throughout life. Guede stresses the importance of silicon as an anti-senescence agent and the usefulness of silicates in atheromatous disease.

References

1. *Mineral Nutrition*. Oklahoma University Press, 1943.
2. *Rev. Biochem.*, vol. 8, p. 29.
3. *Mineral Nutrition*.
4. *Exper. Med.*, 103:49–56, 1956.
5. *Rev. Biochem.*, 2, p. 243.

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6. Daikoku, K. *Soc. Path. Japan*, 24:72–76, 1934.

7. *J. Med. Paris*, 54:152, 1934.

Nutritional Disorders

"Nutritional adequacy is best not taken for granted, no matter how favorable the patient's circumstances. The role of nutrition in preventing the chronic degenerative diseases is only now becoming evident."

—Michael G. Wohl, MD, *Nutritional Disorders*, Spectrum, Brooklyn, New York

Aged Lack Vitamin B

"Vitamin B compounds were implicated in aging, pernicious anemia, and leukemia at a session of the Federation of American Societies for Experimental Biology meeting in Philadelphia. Dr. Ranke reported that vitamin B6 deficiency in the aged may represent an increased need of with advancing years. As the individual grows older, it is also possible the aged person may find it more difficult to absorb and utilize the vitamin."

—*Science News Letter*, p. 262, April 26, 1958

Diagnosis of Dental Disease

"Radiographs are most valuable in the diagnosis of dental disease. They should not be abandoned but be used judiciously and in such manner as to give greatest value for the slight risk involved."

—Editorial, *Ohio State Dental Association Journal*

Tip of the Month (Corticotrophin and Thymex)

Corticotrophin and its untoward effects: *Science Weekly* (p. 590, March 1958) reports that corticotrophin (ACTH) administered to test animals over a period of time causes in the female severe arteriosclerosis and in the male polyarteritis nodosa, gastric ulcers, testicular atrophy, and renal calculi, with hypertension occurring in both sexes. Unusually rapid aging was a characteristic of the older animals. Adrenals were enlarged and the thymus was inhibited by the treatment.

We believe the thymus is the normal antidote to the above-mentioned effects. Thymex is the thymus factor that we believe is the phagocyte activator of the thymus. We know from clinical experience that Thymex opposes the adrenal hormone cortisone. Cortisone blocks phagocyte control of infective processes and must be used with caution where any chronic infection exists. Swollen lymphatic glands, for instance, have shown prompt improvement after the use of Thymex but are aggravated by cortisone.

Mental Adjustment to Physical Changes with Aging

"There is a series of physical conditions that indirectly affect the intellectual function of the individual and his emotional reactions. All of the special senses become less keen. Eyesight is definitely affected; the individual begins in his forties to lose the ability to accommodate to near objects and requires bifocals for reading. There is commonly a decrease, extremely variable in amount, in hearing. Thus the individual sees and hears less of what is going on about him. He usually recognizes this fact. He may attempt to compensate for it, or he may withdraw in a somewhat depressed and embittered fashion. In either case a personality change occurs, which is the secondary result of these changes in sight and hearing. Occasionally, a person will not wear glasses because he feels that it makes him look old, or he may refuse to wear a hearing device. Another important change is loss of teeth. Unless this is compensated for by excellent dentures, a number of changes may occur. He may live on a soft, poorly balanced diet, which may lead to serious protein, mineral, and vitamin deficiencies. This will decrease his energy and interest, cause easy fatigability, and may produce severe emotional reactions because of the feeling of inadequacy."

—Karl M. Bowman, MD, *Geriatrics*

High Points of Standard Process Nutritional Adjuncts

Thymex: This factor of the thymus gland (beef) activates phagocytes and promotes phagocytosis to the extent that congestion is promptly relieved and toxicity is reduced at once. It is especially useful in any inflammatory condition, acute or chronic, through its ability to relieve soreness and congestion quite promptly. Many types of degenerative conditions have been benefited through the ability of Thymex to clean up body processes that are abnormal and require healing and to promote that healing.

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